The Freshwater Crab Fauna (Crustacea, Brachyura) of the Philippines II. The Genus *Parathelphusa* H. MILNE EDWARDS, 1853 (Family Parathelphusidae)

By

Peter K. L. NG

Department of Zoology, National University of Singapore, Kent Ridge, Singapore 0511, Republic of Singapore

and

Masatsune TAKEDA

Department of Zoology, National Science Museum, Shinjuku, Tokyo 169, Japan

Abstract In addition to the revised descriptions of two known species of the genus *Parathelphusa* H. MILNE EDWARDS, 1853, *P. palawanensis* (BOTT, 1969) and *P. obtusa* (BOTT, 1969) from Palawan, the descriptions of six new species from the Philippines are presented; *P. saginata*, *P. rasilis* and *P. nana* from Palawan, *P. balabac* and *P. parma* from Balabac, and *P. mindoro* from Mindoro.

The freshwater crabs of the genus *Parathelphusa* H. MILNE EDWARDS, 1853, form a very distinctive group in Sundaic Southeast Asia, often inhabiting lowland waters, and are characterised by having three teeth on the anterolateral margin (external orbital angle and two epibranchial teeth). Bott (1969) established the genus *Palawanthelphusa* for four species from northern Borneo and Palawan, but Ng & Goh (1987) showed that all the supposed generic characters of *Palawanthelphusa* overlap with those of *Parathelphusa* and synonymised both genera. Some 25 described species are known from Malaysia, Singapore and western Indonesia (see Ng, 1988; Ng & Dudgeon, 1992; Ng & Takeda, 1992a). From the Philippines, however, only two species, *Parathelphusa palawanensis* (Bott, 1969) and *P. obtusa* (Bott, 1969), have been reported, both from Palawan (Bott, 1969; 1970a, b).

The present study, the second in a series on Philippine freshwater crabs (see NG & Takeda, 1992b), records a total of eight *Parathelphusa* species, six of which are undescribed (*P. saginata*, *P. rasilis*, *P. nana*, *P. balabac*, *P. parma*, *P. mindoro*), including the first record of the genus for Balabac and Oriental Mindoro. One new species from Palawan, *P. nana*, is also the smallest known species of the genus, maturing at about 15 mm carapace width.

The abbreviations G1 and G2 are used for the male first and second pleopods

2

respectively. All measurements, in millimeters, are of the carapace width and length respectively. The terminology used here essentially follows that by NG (1988). Specimens are deposited in the National Science Museum, Tokyo (NSMT), and the Zoology Museum, University of Copenhagen (ZMUC). Voucher specimens will be sent to the Zoological Reference Collection, Department of Zoology, National University of Singapore, at a later date.

Family Parathelphusidae Alcock, 1910

Genus Parathelphusa H. MILNE EDWARDS, 1853

Type species: Parathelphusa tridentata H. MILNE EDWARDS, 1853

Parathelphusa palawanensis (Bott, 1969)

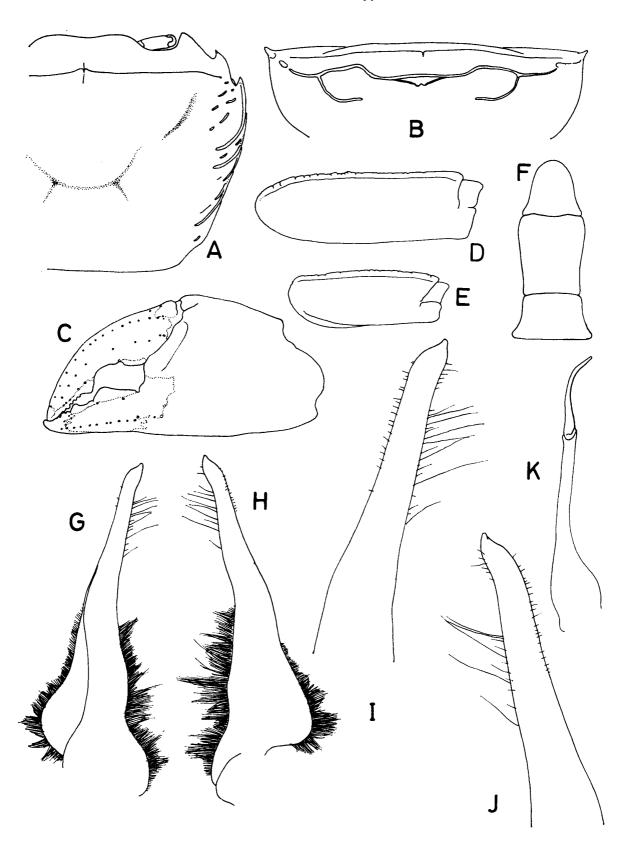
(Figs. 1-3)

Palawanthelphusa palawanensis Bott, 1969: 365.—Bott, 1970 b: 130, pl. 25 figs. 95-97, pl. 31 fig. 97.

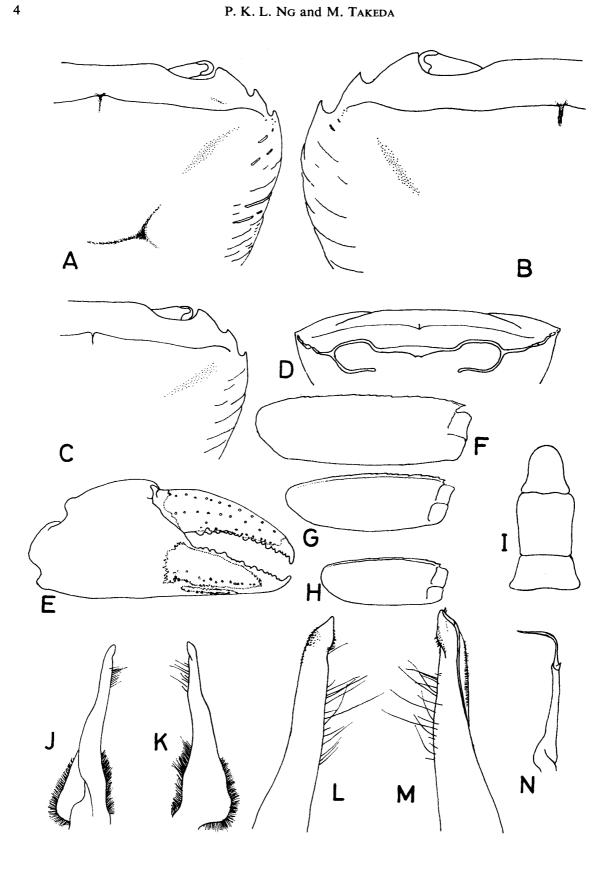
Material examined. Simbulan, Palawan, 1 male (holotype, 43.8 by 34.3 mm) and 1 female (paratype, 41.2 by 33.0 mm) (ZMUC), leg. Tage Ellinger, 2. v. 1952. — Iraan River, Palawan, 8 males (largest 25.1 by 20.0 mm), 18 females and 3 juveniles (NSMT-Cr 9283), leg. M. Takeda, S. Shokita & N. Gapas, 5. viii. 1985. — Manili, Palawan, 1 male (29.8 by 23.1 mm) and 4 females (NSMT-Cr 9298), 1 female (NSMT-Cr 9299), leg. H. Morioka, 18. viii. 1985.

Description. Carapace transverse, gastric and branchial regions not distinctly swollen, dorsal surface appearing convex longitudinally; cervical groove shallow; epigastric and postorbital cristae sharp, confluent, continuous, sinuous, stopping just before notch separating first and second epibranchial teeth. Front almost straight; external orbital angle triangular to subtruncate, outer margin gently convex to almost straight, about twice length of inner margin; epibranchial teeth well developed, sharp, directed forwards. Suture between second and third sternal segments incomplete, gently convex towards buccal vavity. Cheliped carpus with well developed sharp inner distal spine, no sub-basal granules; dactylus pigmented black throughout except for tip, most of pollex pigmented black except for distal part and lower part. Dorsal margins of meri of ambulatory legs gently serrated, usually without sharp subdistal spine. Male abdominal segment 6 longer than segment 7, lateral margins of segment 6 gently convex to almost straight, subparallel, lateral margins of segment 7 distinctly concave. Gl gently sinuous or almost straight, directed upwards, distalmost part

Fig. 1. Parathelphusa palawanensis (BOTT, 1969). Holotype male (ZMUC) from Palawan, 43.8 by 34.3 mm. A, dorsal view of carapace; B, frontal view of carapace; C, left chela; D, right third ambulatory merus; E, right fourth ambulatory merus; F, last three male abdominal segments; G-J, left G1; K, left G2. G and I, ventral view; H and J, dorsal view.



P. K. L. NG and M. TAKEDA



slightly but distinctly dilated outwards, opening distal, tip sharp. G2 with distal segment 0.53-0.60 times length of basal segment.

Remarks. The smaller male specimens and females agree relatively well with the holotype and largest non-type male in most aspects, although in smaller females,

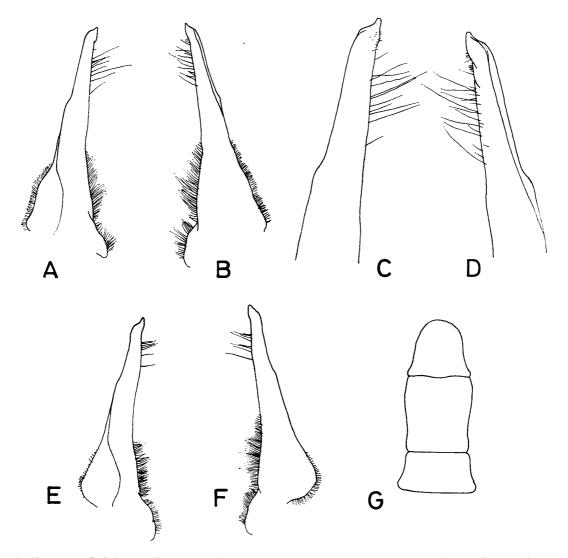


Fig. 3. Parathelphusa palawanensis (BOTT, 1969). A-D, male (NSMT-Cr 9283) from Palawan, 25.1 by 20.0 mm; E-G, male (NSMT-Cr 9283) from Palawan, 21.5 by 17.2 mm. A-F, left G1s; G, last three abdominal segments. A, C, and E, ventral views; B, D, and F, dorsal views.

Fig. 2. Parathelphusa palawanensis (BOTT, 1969). A, E, G-N, male (NSMT-Cr 9298) from Palawan, 29.8 by 23.1 mm; B, F, female (NSMT-Cr 9283), 41.9 by 32.4 mm; C, D, male (NSMT-Cr 9283) from Palawan, 25.1 by 20.0 mm. A-C, dorsal view of carapaces; D, frontal view of carapace; E, right chela; F, G, right third ambulatory meri; H, right fourth ambulatory merus; I, last three male abdominal segments; J-M, left G1; N, G2. J and L, ventral view; K and M, dorsal view.

the carapace striae and granules are more distinct, being especially more prominent on the anterior part of the carapace closer to the cristae. Smaller specimens also appear to be relatively flatter. In a few specimens, the crista ends just before the beginning of the second epibranchial tooth.

The left G1 of the holotype male was infested by several nematode worms, including one which had entered the groove for the G2. No deformity however could be detected.

Parathelphusa saginata sp. nov.

(Fig. 4)

Material examined. Small river near Puerto Princesa, Palawan, 1 male (holotype, 30.6 by 24.8 mm) (NSMT-Cr 9300), 2 young females (paratypes, NSMT-Cr 11277), leg. Y. Kurata, xii. 1986.

Description. Carapace transverse, gastric and branchial regions swollen, dorsal surface appearing convex laterally and longitudinally; cervical groove distinct; epigastric and postorbital cristae sharp, confluent, continuous, gently sinuous, stopping just before base of first epibranchial tooth. Front almost straight; external orbital angle subtruncate, outer margin gently convex, about twice length of inner margin; epibranchial teeth well developed, sharp, first tooth directed forwards, second tooth directed obliquely outwards. Suture between second and third sternal segments incomplete, gently convex towards buccal cavity. Cheliped carpus with strong spine on inner distal angle, with 2-3 sub-basal denticles, dactylus of chela pigmented black throughout except for tip, most of pollex pigmented black except for distal part and lower part, fingers subequal to length of palm, outer surface of merus rugose, outer surface of palm smooth. Dorsal margins of meri of ambulatory legs gently serrated, without trace of subdistal spine or knob. Male abdominal segment 6 slightly longer than segment 7, lateral margins of segment 6 sinuous, subparallel, lateral margins of segment 7 gently convave. G1 curves gently outwards, distal half almost straight, gradually tapering, distal part not dilated, opening distal, tip sharp. G2 with distal segment about 0.54 times length of basal segment.

Remarks. The two small female specimens (both not mature) agree with the holotype male in almost all non-sexual features except they appear flatter.

The specimens from northern Palawan are closest to *P. palawanensis*, especially with regards to the well developed and sharp epibranchial teeth, but differ in several key aspects, viz. the distinctly more inflated branchial regions which give the carapace a more swollen physiognomy, shorter sixth male abdominal segment, and a G1 with a more tapered distal part. These differences warrant the establishment of a separate taxon, *P. saginata* sp. nov. for the northern Palawan specimens.

The new species is named after the inflated carapace, from the Latin "saginatus" for "fattened".

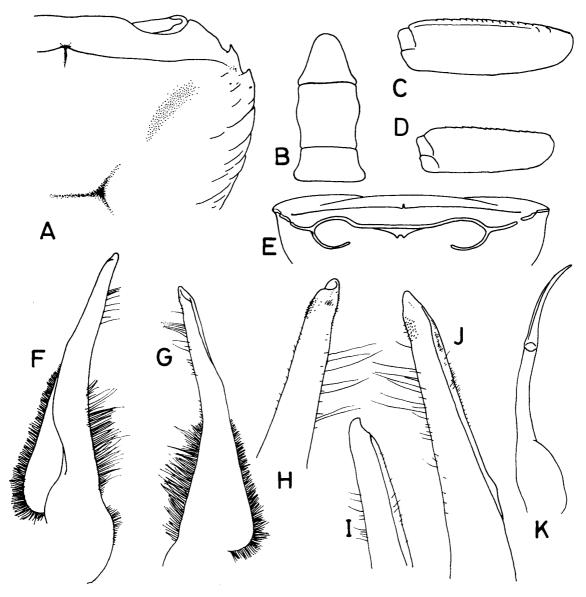


Fig. 4. Parathelphusa saginata sp. nov. Holotype male (NSMT-Cr 9300) from Palawan, 30.6 by 24.8 mm. A, dorsal view of carapace; B, last three male abdominal segments; C, left third ambulatory merus; D, left fourth ambulatory merus; E, frontal view of carapace; F-J, left G1; K, left G2. F and H, ventral view; G, I, and J, dorsal view (I drawn in slightly different orientation from J).

Parathelphusa obtusa (BOTT, 1969)

(Fig. 5)

Palawanthelphusa obtusa Вотт, 1969: 366.—Вотт, 1970 b: 131, pl. 25 figs. 98, 99, pl. 31 fig. 98.

Material examined. Pinigisan, Palawan, 1 male (holotype, 30.0 by 23.5 mm) (ZMUC), leg. Noona Danish Exp., 13. ix. 1961.

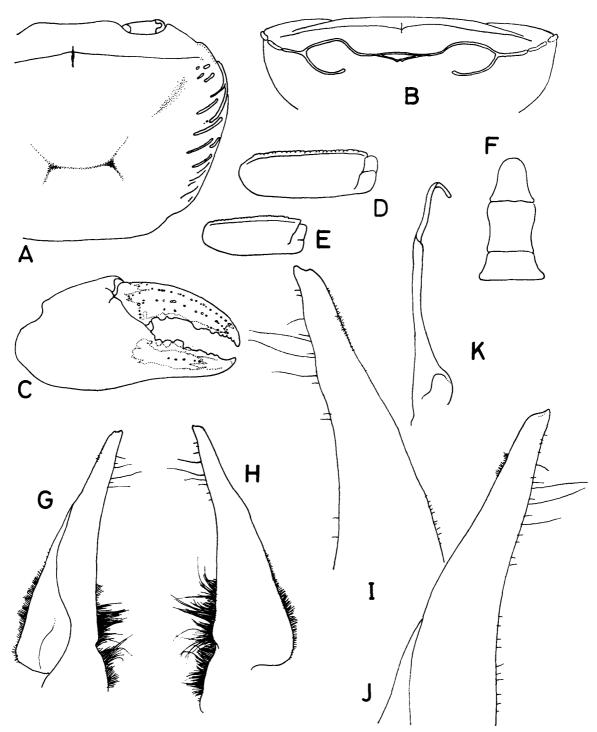


Fig. 5. Parathelphusa obtusa (Bott, 1969). Holotype male (ZMUC) from Palawan, 30.0 by 23.5 mm. A, dorsal view of carapace; B, frontal view of carapace; C, right chela; D, right third ambulatory merus; E, right fourth ambulatory merus; F, last three male abdominal segments; G-J, left G1; K, left G2. G and I, ventral view; H and J, dorsal view.

Description. Carapace transverse, gastric and branchial regions gently swollen, dorsal surface appearing convex laterally and longitudinally; cervical groove broad, shallow; epigastric and postorbital cristae sharp, confluent, continuous, almost straight, stopping just before base of notch separating first and second epibranchial teeth. Front slightly sinuous; external orbital angle triangular, outer margin gently convex, about 3 times length of inner margin; epibranchial teeth low, indistinct, first epibranchial tooth blunt, lobiform, directed forwards, second epibranchial tooth represented by a raised ridge, no tooth discernible. Suture between second and third sternal segments incomplete, gently convex towards buccal cavity. Cheliped carpus with well developed inner distal spine, and one low sub-basal denticle, dactylus of chela pigmented black throughout except for tip, pollex pigmented black mainly on proximal upper part, fingers subequal in length to palm. Dorsal margin of meri of ambulatory legs gently serrated, without distinct subdistal spine. Male abdominal segment 6 longer than segment 7, lateral margins of segment 6 sinuous, lateral margins of segment 7 gently concave. G1 stout, curves gently outwards, tapering towards blunt, sub-truncate G2 with distal segment about 0.49 times length of basal segment.

Remarks. This species was described from one male, three females and one juvenile from Pinigisan in Palawan Island, with Bott (1970b: 131) commenting that the species "... bewont vermutlich spezielle Lebensraume". We have not obtained specimens referrable to this species, which was characterised by its very low and broad epibranchial teeth ("Seitenrandzahne nur angedeutet", Bott, 1970b: 129). The holotype male examined agrees with Bott's (1969, 1970b) description and figures well. It is refigured here in detail.

The present specimens from Panibacan and Panitan Rivers, here referred to a new species, *P. rasilis*, have G1s generally similar in shape to that of *P. obtusa*, but their external appearances are very different. Compared to *P. obtusa*, *P. rasilis* has well developed and sharp epibranchial teeth (vs. low, blunt, appearing almost lobiform), and the sixth male abdominal segment is distinctly more elongate. The G1s of the two species also differ somewhat, with that of *P. obtusa* being proportionately shorter and broader at the base. The holotype male of *P. rasilis* (29.3 by 23.7 mm) from Panitan River (NSMT 9293) is comparable in size to that of the holotype male of *P. obtusa* (30.0 by 23.5 mm). These differences are constant for all the specimens of *P. rasilis* we have examined. We thus prefer to regard the specimens from Pinigisan and Panibacan/Panitan as a separate species, until the differences observed here can be shown to be just variations.

Parathelphusa rasilis sp. nov.

(Figs. 6, 7)

Material examined. Panitan River, Palawan, 1 male (holotype, 29.3 by 23.7 mm) (NSMT-Cr 9293), 5 females (paratypes, largest 45.5 by 34.7 mm) (NSMT-Cr 11278), leg. M. TAKEDA, S. SHOKITA and N. GAPAS, 6. viii. 1985. — Panibacan River, Palawan,

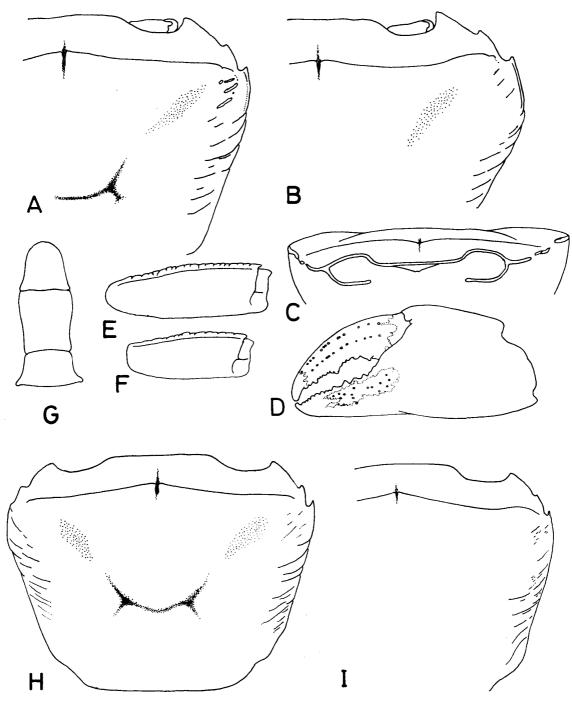


Fig. 6. Parathelphusa rasilis sp. nov. A, D-G, holotype male (NSMT-Cr 9293) from Palawan, 29.3 by 23.7 mm; B, female (NSMT-Cr 11278) from Palawan, 45.5 by 34.7 mm; C, female (NSMT-Cr 9292) from Palawan, 31.5 by 25.5 mm; H, male (NSMT-Cr 9286) from Palawan, 18.2 by 14.6 mm; I, male (NSMT-Cr 9286) from Palawan, 18.1 by 15.0 mm. A, B, H, I, dorsal view of carapaces; C, frontal view of carapace; D, left chela; E, right third ambulatory merus; F, right fourth ambulatory merus; G, last three male abdominal segments.

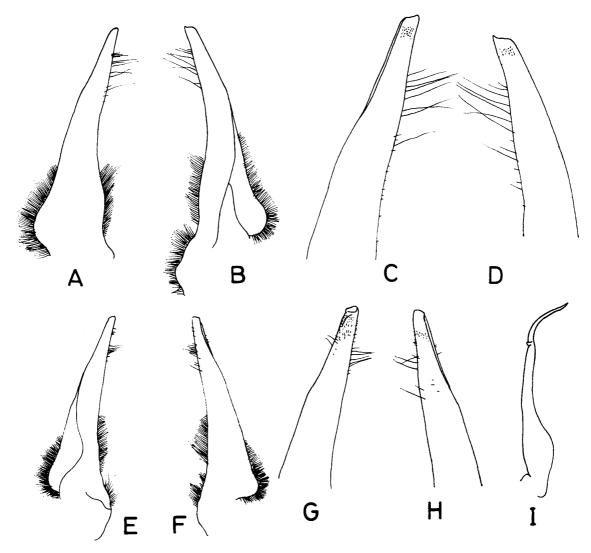


Fig. 7. Parathelphusa rasilis sp. nov. A-D, holotype male (NSMT-Cr 9293) from Palawan, 29.3 by 23.7 mm; E-I, male (NSMT-Cr 9286) from Palawan, 18.2 by 14.6 mm. A-D, right G1 (left G1 missing); E-H, left G1; I, left G2. B, D, E, and G, ventral view; A, C, F, and H, dorsal view.

8 young males (largest 18.2 by 14.6 mm) and 5 young females (largest 19.3 by 15.9 mm) (NSMT-Cr 9286), leg. M. TAKEDA, S. SHOKITA and N. GAPAS, 5. viii. 1985. — Swan River, near Quezon, Palawan, 1 female (paratype, 31.5 by 25.5 mm) (NSMT-Cr 9292), leg. M. TAKEDA, S. SHOKITA and N. GAPAS, 6. viii. 1985.

Description. Carapace transverse, gastric and branchial regions swollen, dorsal surface appearing convex laterally and longitudinally; cervical groove relatively narrow, shallow; epigastric and postorbital cristae sharp, confluent, continuous, straight to sinuous, stopping just before base of notch separating first and second epibranchial teeth. Front gently convex to slightly sinuous; external orbital angle triangular, outer margin almost straight, between 2 to 3 times length of inner margin; epibranchial

12

teeth distinct, first epibranchial tooth blunt, directed forwards, second epibranchial tooth sharp, directed obliquely outwards. Suture between second and third sternal segments incomplete, gently convex towards buccal cavity. Cheliped carpus with well developed inner distal spine, no sub-basal denticles, dactylus of chela pigmented black throughout except for tip, pollex pigmented black only on proximal upper part, fingers subequal in length to palm. Dorsal margins of meri of ambulatory legs serrated, without subdistal spine, usually knob-like, sometimes with sharp tooth. Male abdominal segment 6 longer than segment 7, lateral margins of segment 6 sinuous, narrower at proximal part than distal part, lateral margins of segment 7 gently concave. G1 curves gently outwards, tapering towards blunt, truncate tip. G2 with distal segment about 0.41 times length of basal segment.

Remarks. The differences between P. rasilis and P. obtusa have already been discussed under the latter species.

The largest female, 45.5 by 34.7 mm (NSMT 11278) is unusual in having the epibranchial teeth especially acute and sharper than the other specimens. In other respects however, it agrees with the other specimens of *P. rasilis*. The second largest female, 25.9 by 21.5 mm (NSMT 11278) is not fully mature, the abdomen still oval-shaped, although it is probably very close to reaching maturity.

The species name "rasilis" is derived form the Latin for having a scraped and smooth appearance, alluding to the texture of the carapace.

Parathelphusa nana sp. nov.

(Fig. 8)

Material examined. Nagasguipi River, Palawan, 1 male (holotype, 23.6 by 19.0 mm) (NSMT-Cr 9295), 3 males (paratypes) and 5 females (paratypes, largest 19.2 by 15.6 mm, 16.0 by 14.0 mm, 15.0 by 13.3 mm, all mature) (NSMT-Cr 11279), 1 ovigerous female (paratype, 19.0 by 16.0 mm) (NSMT-Cr 9294), 1 female (paratype, 23.4 by 19.5 mm) (NSMT-Cr 9296), leg. M. TAKEDA, S. SHOKITA and N. GAPAS, 9. viii. 1985.

Description. Carapace squarish, gastric and branchial regions swollen, dorsal surface appearing convex laterally and longitudinally; cervical groove shallow, indistinct; epigastric and postorbital cristae sharp, confluent, continuous, gently sinuous, stopping just before base of second epibranchial tooth. Front almost straight; external orbital angle triangular, outer margin almost straight, about 3 times length of inner margin; first epibranchial tooth small, blunt, directed forwards, second epibranchial very small, blunt. Suture between second and third sternal segments incomplete, gently convex towards buccal cavity. Dactylus of chela pigmented black throughout except for tip, pollex pigmented black only on upper part. Dorsal margins of meri of ambulatory legs serrated, with sharp subdistal spine. Male abdominal segment 6 slightly longer than segment 7, lateral margins of segment 6 gently sinuous, slightly narrower at proximal part than distal part, lateral margins of segment 7 gently concave. G1 curves gently outwards, tapering towards sharp tip. G2 with distal

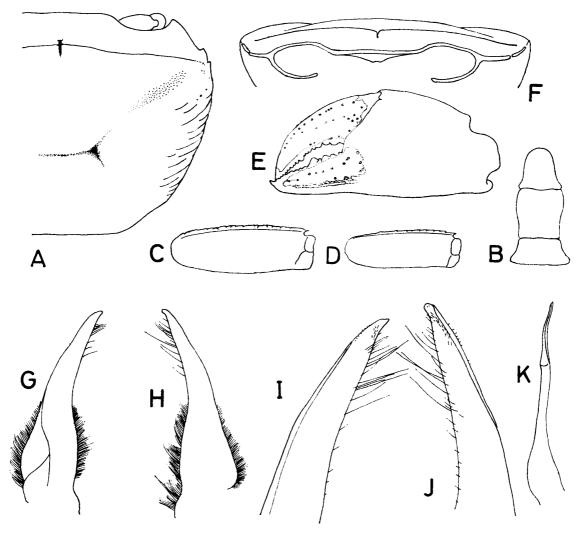


Fig. 8. Parathelphusa nana sp. nov. Holotype male (NSMT-Cr 9295) from Palawan, 23.6 by 19.0 mm. A, dorsal view of carapace; B, last three male abdominal segments; C, right third ambulatory merus; D, right fourth ambulatory merus; E, left chela; F, frontal view of carapace; G-J, left G1; K, left G2. G and I, ventral view; H and J, dorsal view.

segment about 0.49 times length of basal segment.

Remarks. This is the smallest known species in the genus Parathelphusa, with the smallest mature female measuring only 15.0 by 13.3 mm in carapace width. The armature of the anterolateral margin is reminiscent of that of juvenile specimens of other Parathelphusa species except that P. nana is fully mature at this small size. The G1s of the males are fully developed, and are characteristically curving gently outwards. The structure of the G1 is unique among all other known Philippine Parathelphusa species.

The Latin name "nana" for small, refers to the species being the smallest member of its genus known thus far.

Parathelphusa balabac sp. nov.

(Fig. 9)

Material examined. Tagunaynay River, Balabac, 1 male (holotype, 26.4 by 20.4 mm) (NSMT-Cr 9284), 2 females (paratypes, 37.7 by 29.4 mm, 36.4 by 28.0 mm) (NSMT-Cr 11280), leg. T. OHMI, 7. iv. 1985.

Description. Carapace transverse, gastric and branchial regions swollen, dorsal surface appearing convex laterally and longitudinally; cervical groove distinct; epigastric and postorbital cristae sharp, confluent, continuous, gently sinuous, stopping just before notch separating first and second epibranchial teeth. Front almost straight;

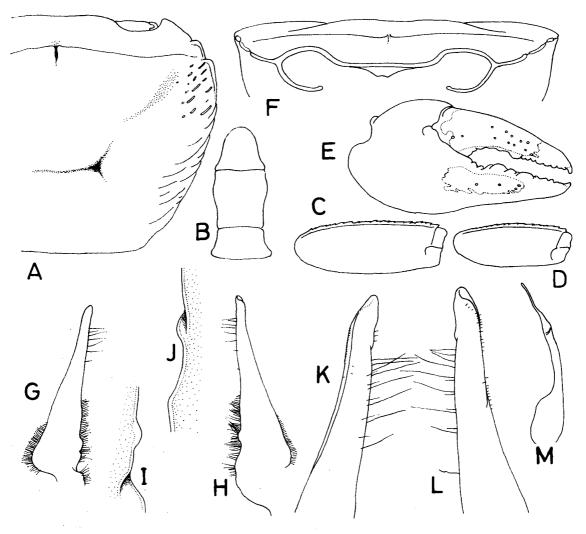


Fig. 9. Parathelphusa balabac sp. nov. Holotype male (NSMT-Cr 9284) from Balabac, 26.4 by 20.4 mm. A, dorsal view of carapace; B, last three male abdominal segments; C, right third ambulatory merus; D, right fourth ambulatory merus; E, right chela; F, frontal view of carapace; G-L, left G1; M, left G2. G, I, and K, ventral view; H, J, and L, dorsal view; I and J, proximal part of G1 outer margin.

external orbital angle triangular, outer margin gently convex, about 2 times length of inner margin; first epibranchial tooth lobiform, blunt, second epibranchial small, blunt. Suture between second and third sternal segments incomplete, gently convex towards buccal cavity. Dactylus of chela pigmented black except for distal one quarter, pollex pigmented black only on proximal upper part. Dorsal margins of meri of ambulatory legs serrated, with subdistal knob or blunt tooth. Male abdominal segment 6 longer than segment 7, lateral margins of segment 6 sinuous, slightly narrower at proximal part than distal part, lateral margins of segment 7 concave. Gl straight, directed upwards, distalmost part slightly dilated outwards, tip sharp, opening distal, outer margin of proximal part with distinct knob. G2 with distal segment about 0.51 times length of basal segment.

Remarks. Parathelphusa balabac sp. nov., together with P. parma sp. nov. (see later), has the lowest and most lobiform epibranchial teeth known for any Philippine Parathelphusa species, and in this respect, resembles species like P. sarasinorum (Schenkel, 1902) from Sulawesi. The form of the anterolateral margin is constant for all three specimens of P. balabac examined. The G1 of P. balabac is very similar to that of P. palawanensis, but differs markedly in the form of the proximal outer margin. In P. balabac, this margin possesses a distinct broad lobe, absent on P. palawanensis. In any event, the epibranchial teeth of P. palawanensis are very different, being sharp and well developed. From P. parma, P. balabac can easily be distinguished by the form of the G1, and its more squarish carapace.

The species is named after its island of origin, Balabac, and the name is to be used as a name in apposition.

Parathelphusa parma sp. nov.

(Fig. 10)

Material examined. Balabac, 1 male (holotype, 39.6 by 29.9 mm) (NSMT-Cr 11281), 2 males and 3 females (paratypes, largest 45.1 by 34.0 mm) (NSMT-Cr 11282), leg. Y. Kurata, ii. 1988.

Description. Carapace transverse, gastric and branchial regions swollen, dorsal surface appearing convex laterally and longitudinally; cervical groove distinct; epigastric and postorbital cristae sharp, confluent, continuous, gently sinuous, stopping just before notch separating first and second epibranchial teeth. Front gently convex or almost straight; external orbital angle triangular, outer margin convex, about 2 times length of inner margin; first epibranchial tooth lobiform, blunt, second epibranchial tooth small, broad, blunt, directed obliquely outwards. Suture between second and third sternal segments incomplete, gently convex towards buccal cavity. Dactylus of chela pigmented black throughout except for tip, pollex pigmented black only on proximal upper part; fingers subequal or longer than palm length. Dorsal margins of meri of ambulatory legs serrated, with blunt subdistal knob or sharp tooth, not spine. Male abdominal segment 6 longer than segment 7, lateral margins of

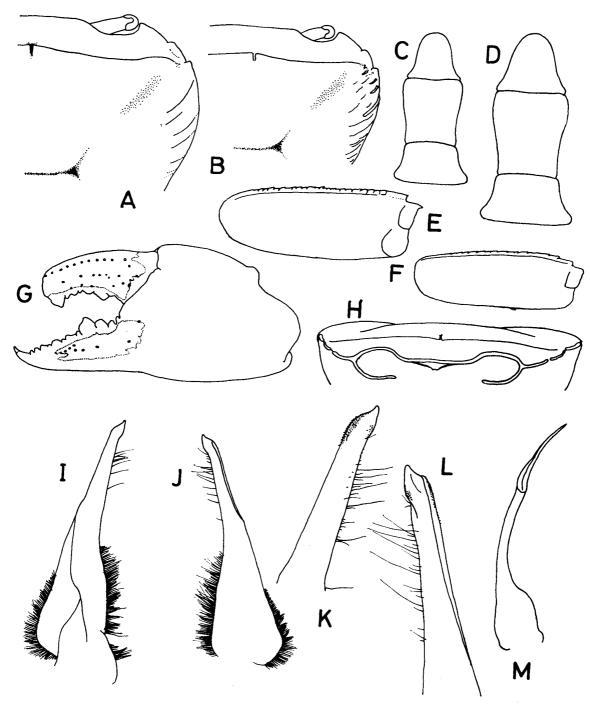


Fig. 10. Parathelphusa parma sp. nov. A, D-F, I-M, holotype male (NSMT-Cr 11281) from Balabac, 39.6 by 29.9 mm; B, C, G, H, male (NSMT-Cr 11282) from Balabac, 30.0 by 23.3 mm. A, B, dorsal view of carapaces; C, D, last three male abdominal segments; E, right third ambulatory merus; F, right fourth ambulatory merus; G, left chela; H, frontal view of carapace; I-L, left G1; M, left G2. I and K, ventral view; J and L, dorsal view.

segment 6 gently sinuous, narrower at proximal part than distal part, lateral margins of segment 7 gently concave. G1 bent gently outwards, tapering towards sharp tip, distalmost part slightly dilated. G2 with distal segment about 0.57 times length of basal segment.

Remarks. The closest species to P. parma sp. nov. seems to be P. balabac, also from Balabac Island, south of Palawan, especially with regards to the lobiform struc-

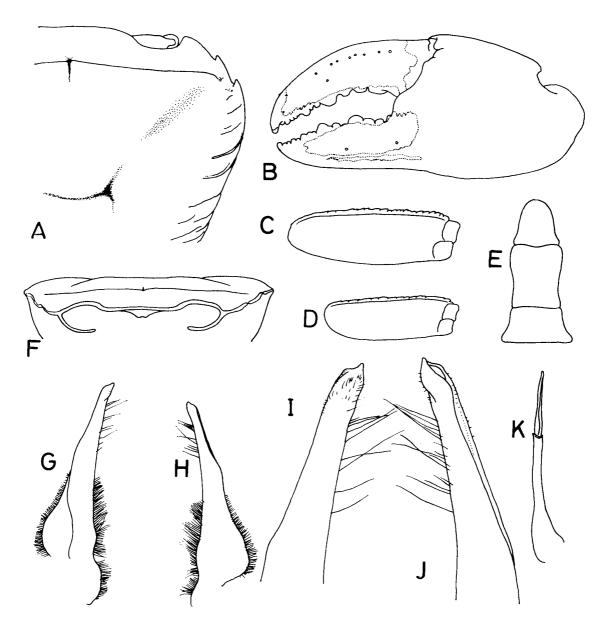


Fig. 11. Parathelphusa mindoro sp. nov. Holotype male (NSMT-Cr 9297) from Oriental Mindoro, 29.2 by 22.8 mm. A, dorsal view of carapace; B, left chela; C, right third ambulatory merus; D, right fourth ambulatory merus; E, last three male abdominal segments; F, frontal view of carapace; G-J, left G1; K, left G2. G and I, ventral view; H and J, dorsal view.

18

ture of the epibranchial teeth. The differences between the two taxa have been discussed under *P. balabac*.

The species name is derived from the Latin "parma" for a small round shield, alluding to the general shape of the carapace.

Parathelphusa mindoro sp. nov.

(Fig. 11)

Material examined. Agan River, Oriental Mindoro, 1 male (holotype, 29.2 by 22.8 mm) (NSMT-Cr 9297), 4 males and 6 females (paratypes) (NSMT-Cr 11285), leg. M. TAKEDA, S. SHOKITA and N. GAPAS, 14. viii. 1985.

Description. Carapace transverse, gastric and branchial regions swollen, dorsal surface appearing convex laterally and longitudinally; cervical groove distinct; epigastric and postorbital cristae sharp, confluent, continuous, almost straight, stopping just before base of first epibranchial tooth. Front gently convex or almost straight; external orbital angle triangular, outer margin gently convex, about 2.5 times length of inner margin; both epibranchial teeth blunt, directed forwards. Suture between second and third sternal segments incomplete, gently convex towards buccal cavity. Outer surfaces of carpi of chelipeds rugose; carpus with well developed sharp spine on inner distal angle and two sharp sub-basal denticles; dactylus finger pigmented black throughout except for tip, pollex pigmented black only on upper part. Dorsal margins of meri of ambulatory legs gently serrated, with blunt subdistal knob. Male abdominal segment 6 longer than segment 7, lateral margins of segment 6 sinuous, narrower at proximal part than distal part, lateral margins of segment 7 gently concave. G1 curves gently outwards, tapering towards sharp tip, distalmost part slightly dilated. G2 with distal segment about 0.52 times length of basal segment.

Remarks. Parathelphusa mindoro sp. nov. is closest to P. palawanensis, but differs in several aspects, viz., the distinctly more inflated carapace, particularly of the branchial regions, the lower and blunter epibranchial teeth, proximal outer margin of the G1 is distinctly sinuous, and the shorter G2 distal segment (0.52 vs. 0.62). These differences are valid for the series of both species examined.

The species is named after its island of origin, Mindoro, and the name is to be used as a name in apposition.

Acknowledgements

The second author wishes to thank his colleagues, Dr. H. MORIOKA, Dr. S. SHOKITA, Mr. N. GAPAS, Mr. Y. KURATA, and Mr. T. OHMI for helping him to collect the specimens. Dr. J. LÜTZEN (ZMUC) kindly arranged the loan of the type specimens of *P. palawanensis* and *P. obtusa*. The second author's study in the Philippines was supported by the Grant-in-aid for Field Research of the Monbusho International Scientific Research Program of the Japanese Government. The first author

was supported by the JSPS (Japanese Society for the Promortion of Science) Program with the National University of Singapore. Partial support by a research grant, RP 900360, from the National University of Singapore is also acknowledged.

References

- BOTT, R., 1969. Flüsskrabben aus Asien und ihre Klassifikation (Crustacea, Decapoda). Senckenb. biol., 50: 359–366.
- 1970 b. Die Süsswasserkrabben von Europa, Asien, Australien und ihre Stammesgeschichte. Eine Revision der Potamoidea und Parathelphusoidea (Crustacea, Decapoda). *Abh. Senkenb. nat. Ges.*, **526**: 1–338, pls. 1–58.
- NG, P. K. L., 1988. The Freshwater Crabs of Peninsular Malaysia and Singapore. Department of Zoology, National University of Singapore, Shinglee Press, Singapore, viii+156, 4 color pls.
- NG, P. K. L., & D. DUDGEON, 1992. The Potamidae and Parathelphusidae (Crustacea: Decapoda: Brachyura) of Hong Kong. *Invert. Tax.*, 6(3): 1-28.
- NG, P. K. L., & R. Goh, 1987. Cavernicolous freshwater crabs (Crustacea, Decapoda, Brachyura) from Sabah, Borneo. *Stygologia*, **3**: 313–330, pls. 1–3.
- NG, P. K. L., & M. TAKEDA, 1992 a. On some freshwater crabs (Crustacea: Brachyura: Potamidae, Parathelphusidae and Grapsidae) from Peninsular Malayasia. *Bull. Natn. Sci. Mus.*, *Tokyo*, (A), 18: 103-116,
- 1992 b. The freshwater crab fauna (Crustacea, Brachyura) of the Philippines. I. The family Potamidae Ortmann, 1896. *Ibid.*, 18: 149–166.